

The way to best combat "compulsory sickness insurance" (compulsory governmental and state medicine insurance) is to prove that *voluntary hospitalization and medical coverage* is not only acceptable, but preferred and used by the majority of citizens. That objective can be attained if physicians everywhere will give wholehearted support to non-profit hospitalization and medical coverage plans exemplified by Blue Cross and California Physicians' Service.

#### COUNTY MEDICAL ASSOCIATION BULLETINS OF CALIFORNIA

**California Medical Association Is Proud of Bulletins of Its County Medical Societies.**—During the last several years the larger component county units of the California Medical Association, and in particular, Los Angeles, San Francisco, Alameda, Santa Clara and San Diego, have been printing *Bulletins*; in fact, on occasions, of such size as to be classed as small medical journals.

In the August issue of CALIFORNIA AND WESTERN MEDICINE mention was made of the latest addition to this group of county publications; namely, *The Bulletin of the Alameda County Medical Association*.

If it were possible to permit every member of the California Medical Association to receive at least once each year a copy of the respective *Bulletins*, we are certain their perusal would be provocative of increased interest in organized medicine.

*The Bulletin of the Los Angeles County Medical Association* is the largest of the group and is the source of a very considerable annual income to that component county society.

Each of the *Bulletins* presents from month to month information of much importance to local members, and in addition, the editors of the respective publications are generous in their consideration of problems confronting organized and scientific medicine. The wholehearted service rendered by the Publication Committees of these *County Bulletins* is worthy of praise, and the Editorial Board of CALIFORNIA AND WESTERN MEDICINE esteems it a privilege to call the attention of members of the California Medical Association to the services that are so rendered.

Good wishes are extended to these publications and also to the editors of the mimeographed and other *Bulletins* supported by others of the component county medical units of the C.M.A. Good wishes to each and all of them.

#### AMERICAN MEDICAL ASSOCIATION MEMBERSHIP STATISTICS

**California Leads All States in Percentage of J.A.M.A. Subscriptions.**—In its issue of September 29, 1945, the *Journal of the American Medical Association*, commencing on page 360, prints items from the report of the A.M.A. Board of Trustees. In Table 1 on "Approximate Count of Fellows and Subscribers on the *Journal* Mail-

ing List January 1, 1945," statistics are given for the various states.

California is credited not only with 4,741 Fellows (Fellows of the A.M.A. are members of the state medical associations who subscribe in advance for the *J.A.M.A.*, and apply at the same time through a state medical association office for A.M.A. Fellowship), but also with 4,475 subscribers, making a grand total of 9,216 A.M.A. Fellows and *J.A.M.A.* subscribers for California. New York, of course, has a larger number, but Pennsylvania has a total of only 8,367; Illinois, 7,023; Ohio, 4,774.

Table 2 dealing with "Percentage of Physicians Receiving the *Journal of the A.M.A.*" based upon number of physicians credited with residence in California according to the 17th Edition of the A.M.A. *Directory*, gives California a total of 9,216 resident California physicians who receive the *J.A.M.A.*, and a total of 12,365 physicians credited with residence in California, thus making the approximate percentage of California physicians who receive the *J.A.M.A.*, 75 per cent.

This is the highest percentage recorded for any one of the states of the Union! The next highest percentage is credited to Utah with 72 per cent, followed by New York, with 65 per cent, Maryland with 64 per cent, then by Arizona and Nevada with 63 per cent, and Pennsylvania with 62 per cent. Massachusetts is given 53 per cent.

Not so bad for the "Wild and Woolly West"?

\* \* \*

**A.M.A. Library Report.**—Concerning the work of the A.M.A. Library, at 535 North Dearborn, Chicago, the following information is given.

#### A.M.A. Library

Requests for the loan of 10,836 periodicals were received and filled by the Library of the American Medical Association in 1944. The requests came from physicians in military service in this country and overseas and from civilian physicians in each of the forty-eight states. Chicago libraries also availed themselves of the service to a considerable extent, the American College of Surgeons having had the loan of 498 periodicals, the Medical Library of Northwestern University School of Medicine 172, the John Crerar Medical Library 338 and the University of Illinois School of Medicine 45. Periodicals and miscellaneous medical reprints were lent to 291 physicians serving with the armed forces.

About 2,000 package libraries were lent during the year. Approximately one-fourth of the requests for this service came from physicians in the various military services of the United States.

The subjects most frequently requested during the year were the Rh factor; penicillin; military medicine, including various phases of tropical medicine, aviation medicine, burns and malaria; blood pressure; sulfonamides; anesthesia, and blood transfusion.

Approximately 200 requests were received from physicians overseas, who stated that they were desperately in need of material on certain subjects. Miscellaneous reference questions numbering 4,500 were answered by letter and telephone.

1 1 1

**Why Not Similar Reports from California Libraries?**—It would be interesting if similar reports along analogous lines could be sent to the OFFICIAL JOURNAL of the California Medical Association by the Lane Library of Stanford University, University of California Medical Library, and the Library of the Los Angeles County Medical Association.

The *J.A.M.A.* membership and subscription figures above given should be gratifying to members of the medical profession of California, since they indicate a special interest, not only in scientific, but in organized medicine.

It would be interesting to know to what extent the interest created among California physicians through the continued endeavors made in the California Legislature to promote compulsory sickness insurance plans may have played a part in the creation of the high percentages which are credited to California in regard to *A.M.A.* Fellowships and *J.A.M.A.* subscriptions.

## EDITORIAL COMMENT†

### HYBRID YEASTS

Demonstration that there is both sexual and asexual reproductive cycle in yeasts, suggested to earlier investigators the possibility of producing desirable new combinations of usable properties in industrial yeasts of hybridization.<sup>1</sup> For example, no natural yeast is capable of fermenting both lactose and maltose.<sup>2</sup> It was conceived that if a lactose-fermenter could be mated with a maltose-fermenter, the resulting hybrid would be of practical industrial interest.

The sexual cycle varies with different yeasts, and is usually more complex than sexual reproduction in higher plants. In 1918 Kruis and Satava<sup>3</sup> of Czechoslovakia showed that the ordinary vegetative cells of *Saccharomyces cerevisiae* are diploid in character, i.e., they have a double number of chromosomes. Under certain unfavorable conditions these diploid cells may segment into four haploid cells, each containing a single number of chromosomes. These ascospores may germinate to produce small round haploid cells, easily distinguishable from ordinary vegetative cells by gross colony structure.

Lindegren<sup>4</sup> of the Henry Shaw School of Botany, Washington University, St. Louis, Mo., subsequently found that these small haploid cells often unite to reform large diploid cells, provided the haptophase cells are of complementary "sex" or mating types. Two mating types were recognized by him. "Legitimate" reproduction takes place by the union of haptophase cells of opposite "sex." "Illegitimate" progeny are formed by "homosexual" union. The illegitimate diploids are usually smaller than legitimate diploids, though they are at times fully capable of growth and fermentation. They, however, usually do not sporulate, but often form fairly stable vegetative cultures, if grown under conditions that do not necessitate sporulation. In addition to these two "sexes" there are usually a number of "neuter" haploids which do not mate.

The first successful hybridization of different species of yeast was reported in 1935 by Winge and Lanstsen.<sup>5</sup> By means of a micromanipulator they placed a haploid ascospore from one strain of yeast in contact with an ascospore from another strain. When all conditions were favorable, "copulation" with exchange of nuclear material took place between the two ascospores, followed by their fusion to produce a diploid vegetative cell. A simpler hybridization technique was afterwards developed by Lindegren,<sup>2</sup> who mated different haptophase cultures, by placing a large drop of a heavy broth suspension of each culture together in a test tube. The mixtures were incubated for 24 hours at 23°C., and the desired hybrids isolated by plating methods.

By this technique Lindegren produced numerous relatively stable hybrid yeasts of promising industrial value. Medical interest, however, will presumably center on his more recent attempts to improve vitamin production by such hybridization methods.<sup>6</sup> He found, for example, that *S. carlsbergensis* is capable of synthesizing large quantities of biotin and pantothenic acid, but is unable to synthesize pyridoxine. *S. cerevisiae* synthesizes large quantities of pyridoxine, but does not synthesize biotin or pantothenic acid. He was able to bring about conjugation between these two species. The resulting hybrid was stable and synthesized all three vitamins in large quantities. In a similar way he found that *S. globosus* is capable of synthesizing pantothenic acid, but is incapable of producing thiamin. An unstable hybrid was made between this yeast with *S. cerevisiae*, and backcrossed with *S. cerevisiae*. The resulting second generation hybrid was stable and a good synthesizer of both thiamin and pantothenic acid.

Burkholder<sup>7</sup> of the Osborn Botanical Laboratory, Yale University, found that of 163 strains of commercial yeasts examined by him, nearly half were deficient synthesizers of three or more essential members of vitamin B complex. Nearly 90 per cent were deficient in the production of at least one essential member. The possibility of improving these deficiencies, therefore, is of wide practical interest.

P. O. Box 51.

W. H. MANWARING,  
Stanford University.

### REFERENCES

1. Guilliermond, A., and Tanner, F. W., *The Yeasts*, John Wiley and Sons, New York, 1920.
2. Lindegren, C. C., *Wallerstein Lab. Comm.*, 7:153, 1944.
3. Kruis, K., and Satava, J., *Nakl. C., Akad. Praha*, p. 67, 1918.
4. Lindegren, C. C., and Lindegren, G., *Proc. Nat. Acad. Sci. U. S.*, 29:306, 1943.
5. Winge, O., and Lanstsen, O., *Compt. Rend. Trav. Lab. Carlsberg, Ser. Physiol.*, 22:337, 1935.
6. Lindegren, C. C., and Lindegren, G., *Science*, 102:33 (July 13), 1945.
7. Burkholder, P. R., McVeigh, I., and Moyer, D., *J. Bact.*, 48:385 (Oct.), 1944.

† This department of CALIFORNIA AND WESTERN MEDICINE presents editorial comments by contributing members on items of medical progress, science and practice, and on topics from recent medical books or journals. An invitation is extended to all members of the California Medical Association to submit brief editorial discussions suitable for publication in this department. No presentation should be over five hundred words in length.